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Jon W Dudas

Acting Under Secretary of Commerce
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and Acting Director of the U.S.
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PROVISIONAL APPLICATION COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53(b)(2).

Docket Number **STRAK-505**

Type a plus sign (+) inside this box   [+]

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TITLE OF THE INVENTION (280 CHARACTERS MAX)

METHOD FOR USING WIRELESS CONTROL FOR CREATION OF AND COMMAND RESPONSE TO STANDARD FREIGHT SHIPMENT MESSAGES

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ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification   Number of Pages: __4__   ☒ Small Entity Statement
APPLICANT IS A SMALL ENTITY

☒ Drawing(s)   Number of Sheets: __3__   ☐ Other (specify) _____

Method of payment (check one)

☐ A check or money order is enclosed to cover the Provisional filing fees.

☒ The Commissioner is hereby authorized to charge filing fees and credit Deposit Account No. 194124.

Provisional Filing Fee Amount: $ 80.00   **APPLICANT IS A SMALL ENTITY**

The invention was made by an agency of the United states Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number _____

Respectfully submitted,

Signature _____   Date: __6/24/03__
Leo Stanger

☐ Additional inventors are being named on separately numbered sheets attached hereto.

METHOD FOR USING WIRELESS CONTROL FOR CREATION OF AND COMMAND RESPONSE TO STANDARD FREIGHT SHIPMENT MESSAGES

This invention utilizes wireless intelligence on a freight asset to evaluate status conditions that automatically trigger transmissions and generate industry standard freight industry messages, which may be used for tracking and monitoring of freight assets and shipments. A corollary of the invention utilizes industry standard freight shipment messages that are evaluated against wireless messages transmitted from a freight asset with wireless intelligence to send command actions to the asset, which change or alter a monitored freight condition. Another corollary involves a method that permits a user to create an industry standard freight message by sending a wireless notification to an asset, which would respond to the notification with a wireless transmission, resulting in an industry standard freight message.

A basic embodiment of the invention appears in Fig. 1.

The specialized aspect of this invention involves a specialized condition of a freight asset, monitored in real-time, which creates an alarm or event condition within an intelligent electronic device on an asset, by virtue of the intelligence of that device. The alarm or event condition is sent via wireless communications to a database application, which formats the message into a standard Electronic Data Exchange (EDI) or Extensible Mark-up Language (XML) message containing relevant information for the asset, and transmits the message to users with information systems that accommodate the standard message types. This process permits the intelligence of the monitoring system on the asset to

transmit standard, "open systems" messages, which are delivered into the existing information systems of users of freight equipment. This invention is unique as the device on the asset automatically evaluates a condition appropriate to provide information that is normally derived from other sources (i.e. wayside monitoring systems that tell when an asset passes by and human creation of events that occur at under specific conditions). One example of this process would involve the local knowledge of location of the asset, by use of a geographic positioning system (gps) sensor or equivalent, when the asset moved into a user designated location, where the asset would generate a wireless message, formatted into an industry standard message for delivery into an information system. The newly formatted message would contain information delivered from the asset, including for example, gps location, time of arrival or departure, and the condition of the freight (door position, temperature, set point temperature, presence of auxiliary equipment, etc.). A second example of this process would involve a laborer changing the temperature set point on a refrigerated trailer or railcar, which generates a wireless message ultimately delivering a standard industry message to the user. With these given messages, the user may compare the wireless generated information from equipment located on the asset to shipping records, providing immediate context to the shipment without the need for local reading devices or operator inputs.
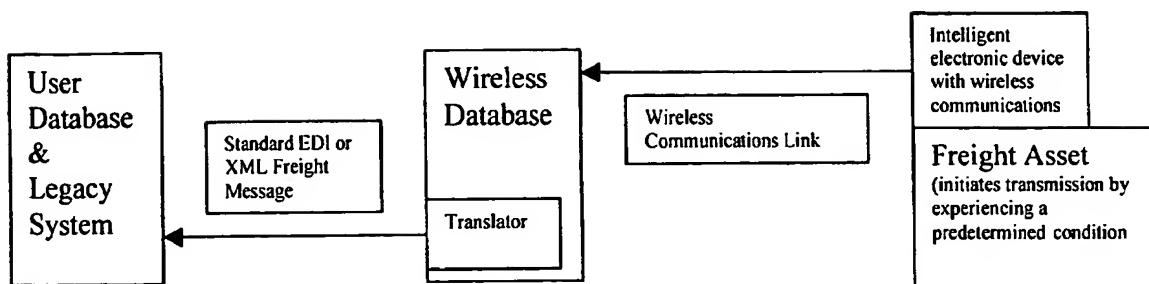
Another embodiment appears in Figs. 2 and 3. This involves the generation of a wireless command to the asset to change a condition based on a discrepancy between an industry standard freight message and information transmitted from a freight asset using wireless communications. Upon the receipt of an industry standard freight message generated by

the user specific to an individual freight asset, the database would compare recent

wireless messages to the newly received freight message. Should an exception occur

resulting from a discrepancy between the originating message, which would involve a

specification for the freight shipment, such as a destination, temperature setting, routing

violation, and recent wireless messages, then the database would send a wireless

command to an intelligent electronic device on the asset, which would change the

condition of the asset. In one example, if a user sent an industry standard freight

message specifying a specific temperature setting for a commodity contained within a

specific freight asset, and the temperature setting were compared to a recently received

actual temperature setting received via wireless communications, then an automatic

command would be sent to the intelligent electronic device instructing it to change the

temperature set point to the prescribed temperature setting. Upon enacting the change in

temperature, the electronic device would send a wireless message confirming that the

action took place, which would in turn be forwarded in an industry standard freight

message in accordance with the invention. Another example would involve the

automatic sending of a command to a unit to lock the freight doors once the asset has left

a prescribed location delivered to the database via an industry standard message.

Yet another embodiment appears in Figs. 4 and 5. This involves a method to create a

standard freight industry message by accessing a database and sending a command via

wireless communications to an intelligent device attached to a freight asset. Upon

receipt of the command from the user, the intelligent device would create a transmission

that would result in an industry standard freight message in a method similar to the embodiments above.

In these embodiments, the standard freight messages would involve, for example, bills of lading (404), waybills (417), Terminal Operations and Intermodal Ramp Activity (322) messages and car location messages, which contain relevant information about freight shipments. These messages, and related messages, would be created from wireless messages via satellite, cellular or radio frequency communications in the first embodiment. In an embodiment, these messages, and related messages, would be used to specify the actual conditions of the freight, and the wireless communications links would be used to assure via control mechanisms, that the freight shipment meets the specification.

| User Database & Legacy System | | Standard EDI or XML Freight Message | Wireless Database | Wireless Communications Link | Intelligent electronic device with wireless communications |
| | Translator | | | | Freight Asset (initiates transmission by experiencing a predetermined condition) |

Basic Invention:
User Notification ◀——————— Freight Condition Changes
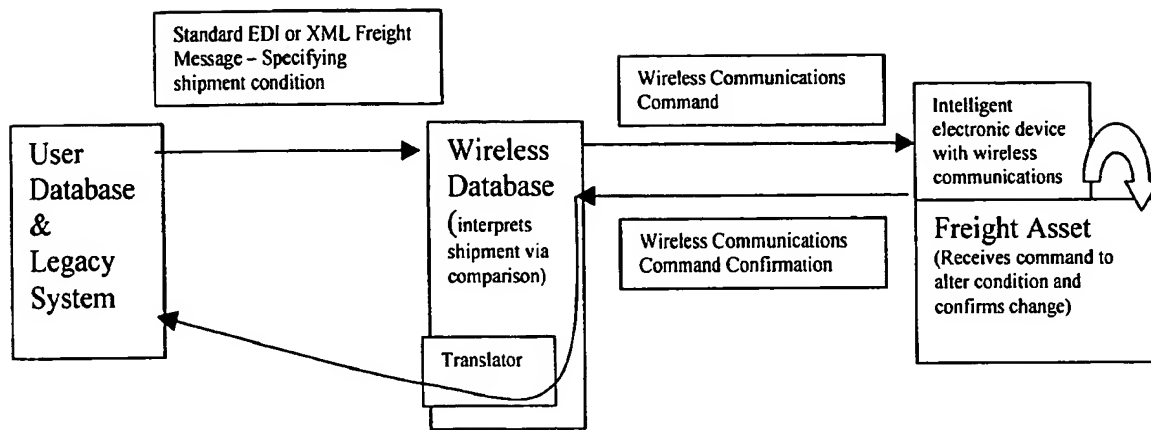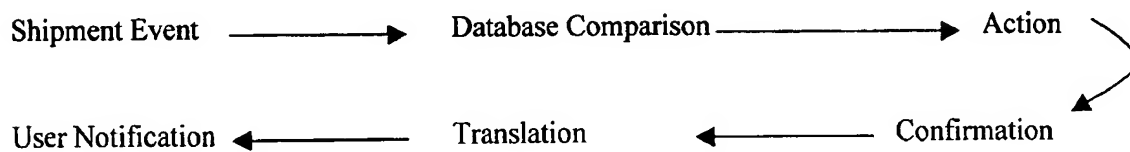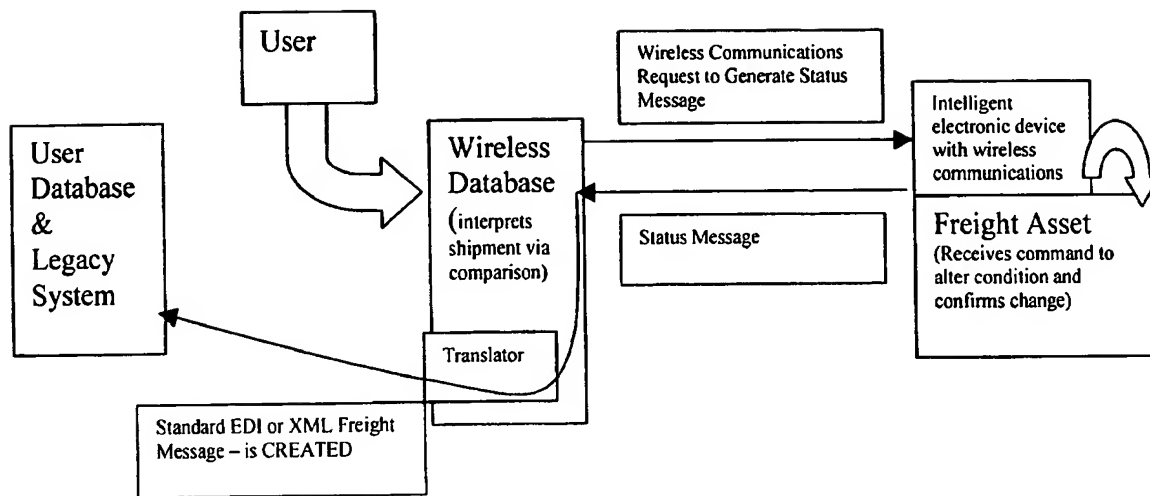(geofence location, temperature change, unlocked door)

FIG. 1

Standard EDI or XML Freight
Message – Specifying
shipment condition

| User Database & Legacy System | Wireless Database (interprets shipment via comparison) | Intelligent electronic device with wireless communications |

Wireless Communications
Command

Wireless Communications
Command Confirmation

Freight Asset
(Receives command to
alter condition and
confirms change)

Translator

FIG. 2

Shipment Event ⟶ Database Comparison ⟶ Action

User Notification ⟵ Translation ⟵ Confirmation

FIG. 3

User

Wireless Communications
Request to Generate Status
Message

User
Database
&
Legacy
System

Wireless
Database
(interprets
shipment via
comparison)

Intelligent
electronic device
with wireless
communications

Status Message

Freight Asset
(Receives command to
alter condition and
confirms change)

Translator

Standard EDI or XML Freight
Message – is CREATED

FIG. 4

User ⟶ Requests Data Creation ⟶ Process Request

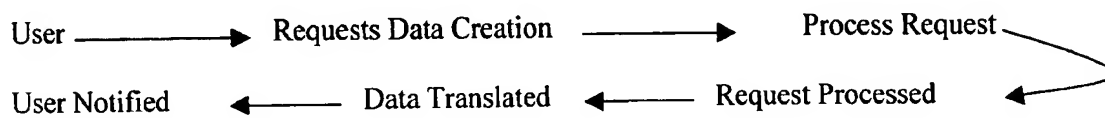User Notified ⟵ Data Translated ⟵ Request Processed

FIG. 5

Document made available under the Patent Cooperation Treaty (PCT)

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